The hitherto unknown female of *Byasa adamsoni takakoae* Uehara, 2006 (Lepidoptera: Papilionidae, Troidini)

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Abstract: The discovery of the female of the recently described *Byasa adamsoni takakoae* Uehara, 2006 is outlined. A detailed description of the female as well as a differential diagnosis in comparing the nominotypical subspecies is given. Additionally further observations of *A. adamsoni takakoae* in southern Thailand are reported and local climatic parameters in connection with distribution are discussed shortly.

Das bisher unbekannte Weibchen von *Byasa adamsoni takakoae* Uehara, 2006 (Lepidoptera: Papilionidae, Troidini)

Zusammenfassung: Im März 2000 fand der Autor eine Troidini-Puppe an einer *Aristolochia*-ähnlichen Schlingpflanze in Thong Ao, Provinz Suratthani (Südthailand). Angeführt als *Parides (Byasa) adamsoni* (Grose-Smith, 1886) in einer früheren Faunenliste (Lechner 2004), konnte das der Puppe entschlüpfte Weibchen inzwischen eindeutig als zur bisher nur nach einer Handvoll bekannter Männchen kürzlich beschriebenen Subspecies *Byasa adamsoni takakoae* Uehara, 2006 zugehörig erkannt werden. Aufgrund einer zeitgleich zu diesem Artikel in Arbeit befindlichen Revision über die Gattung *Byasa* (Racheli & Cotton, in Vorb.) wurde das Weibchen vorab für eine Abbildung und kurze Diagnose zur Verfügung gestellt. Im vorliegenden Beitrag wird dieses Weibchen genauer und im Vergleich zur nominotypischen Unterart beschrieben und abgebildet. Zusätzliche, bisher nicht publizierte Funde von *B. adamsoni takakoae* werden mitgeteilt und die lokalen klimatischen Gegebenheiten im Zusammenhang mit der Verbreitung kurz diskutiert.

Introduction

A few years ago a new subspecies of *Byasa adamsoni* (Grose-Smith, 1886) was described, based on 2 male specimens collected on Koh Samui, southern Thailand (Uehara 2006). Recently 2 further specimens have been discovered on the same island as the holotype (Day 2009, Inayoshi 1996–2009). Including a ♂ from Nakhorn Sri Thammarat figured by Pinratana (1977), obviously belonging to the same taxon, the southern race of *B. adamsoni,* identified by weakly developed white discal spots and rudimentary submarginal lunules on the upperside hindwing, was so far known from 5 ♂♂ found in the northeastern edge of Sundaland in the Thai provinces of Suratthani and Nakhorn Sri Thammarat.

Discovery of the female

For nearly two decades the author has been observing and collecting butterflies, moths and other insects sporadically during irregular short visits to the Thai peninsula, chiefly in Suratthani, the largest province of southern Thailand. First results of these private investigations on butterflies were published a few years ago (Lechner 2004).

In the course of one of these trips two larvae and one pupa resembling a Troidini species were found in Thong Ao (Don Sak District, Suratthani Province) near the seaside in coastal vegetation mixed with secondary growth and garden plants dominated by *Cocos nucifera* palms (Fig. 5). The caterpillars were feeding on an *Aristolochia*-like shrub climbing on a coconut trunk. Colouration and design of the nearby pupa suggested this is not *Troides aeacus malaiianus* Fruhstorfer, 1902, which also flies there, but probably the immature stages of *Pachliopta aristolochiae asteris* (Rothschild, 1908), a species not rare in that place at that time. So it was decided just to take the pupa for evidence (see Lechner 2004: fig. 14).

A few days later the butterfly emerged. Although it was not really like *P. aristolochiae asteris* at all it didn't fill the author's mind due to the expectations and lack of time. Only at home it was surprisingly discovered that it must be a ♀ of *B. adamsoni* which is distributed from the Shan States to Mergui in Myanmar (d'Abrera 1982), across West-, North-, Northeast- and Southeast Thailand as far south as Phetchaburi Province (Cotton pers. comm., Godfrey 1930, Pinratana & Eliot 1992), to Laos (Cotton & Racheli 2007) as well as southern Cambodia and southern Vietnam (Inayoshi 1996–2009). In March 2000 when the caterpillars and the pupa were found only one record of *B. adamsoni* – a melanic ♂ – was known from South Thailand (Pinratana 1977), situated in the Kedawian Zone in Sundaland, and Brother Amnuay Pinratana was the first to question the taxonomic status of this ♂.

As there was no additional material for comparison, i.e. without serious knowledge about the variation of this taxon, the ♀ of Thong Ao was integrated into the list of butterflies observed in the Don Sak area as *Parides (Byasa) adamsoni* (Lechner 2004: 268).

While preparing the present paper it turned out that a revision of the genus *Byasa* is being written at the moment (Racheli & Cotton, in prep); these authors prefer a full generic status for this group of species, which is followed here in contrast to Lechner (2004). Therefore the author made a photo of the ♀ shown in the present publication available to the two authors for use in their revision. As Racheli & Cotton will point out only diagnostic characters, the ♀ of *B. adamsoni takakoae* Uehara, 2006 will be described here in some more detail. To allow a comparison of *B. adamsoni takakoae* (Figs. 1, 2) with

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the nominotypical subspecies it is essential to figure this ♀ as well (Figs. 3, 4).

Description of the female of *B. a. takakoae*

Upperside: Length of forewing 49 mm. Both wings with dark brown ground colour. Hindwings with elongated discal white patches in spaces 1b to 5, that in space 5 only weakly developed. All of them distally and especially proximally a little faded and not reaching the cell. The patches in spaces 2 and 3 distally slightly convex, that in 4 distally concave. Submarginal lunules in spaces 2 to 5 narrow but distinct, rudimentary in space 6. Discal patches and submarginal lunules always clearly separated.

Underside: Ground colour of forewings dark brown, that of the hindwings black. White discal patches on the hindwings developed as on the upperside but more clearly defined, forming a connected band from 1b to 3 but with the patch in 4 isolated. Lunules more prominent than on the upperside with a rich red in spaces 1b and 2. Discal patches and submarginal lunules never connected.

Differential diagnosis: Comparing the ♀ of *B. adamsoni takakoae* to the nominotypical subspecies, the most useful feature seems to be that there are no confluent markings in space 5 on the upperside of the hindwing. Moreover the dark area between the discal white band and the submarginal lunules appears larger due to the weaker development of the elongated discal markings. On the underside of the hindwing the separated white discal patch in space 4 as well as the rudimentary spot in space 5, which is clearly removed from the lunule in the same space, is striking.

Additional observations on Koh Pha Ngan

In 2005 the author met the late Peder Greve, a Danish lepidopterist living for several years on Koh Pha Ngan, a nearby island to Koh Samui. During a visit to his house he told me about his observations in South Thailand, especially from the area he lived in, and showed me a drawer full of *B. adamsoni* collected by himself since the mid 1990ies on his home island. Having a series of the insect he and his Canadian collecting friend Barry Heisler recognised that the specimens — darker than normal *B. adamsoni* due to weakly developed white markings — most probably represent a new subspecies. It is not known whether Barry Heisler also has some of these specimens in his collection.

It is very likely that Peder Greve (and probably Barry Heisler?) was the only person to observe *B. adamsoni takakoae* in greater numbers. Confusingly Peder mentioned also three "lighter" *B. adamsoni* seen in Koh Pha Ngan by himself but far away and so geographically clearly separated from the darker ones. Unfortunately this locality was destroyed in the meantime and possibly we are not able to verify Peder's statements.

Discussion

According to the information on the distribution hitherto known *B. adamsoni* is a species adapted to a seasonal tropical climate, which is characteristic for most of the Indochinese region and to some extent also for the Kedawian Zone, the northwestern part of Sundaland. Corbet (1941) and Zeuner (1941) described Kedawi as a climate with a pronounced dry season where the rainfall during the driest month is considerably less than that during the wettest month of the year. Actually it is thus a very interesting question which parts of the lower Thai peninsular territory are inhabited by *B. adamsoni*. Due to a short respectively almost not existing real dry period with significantly less rainfall in the major parts of the Provinces Chumphon, Ranong and Phang Nga it is hardly conceivable that *B. adamsoni* inhabits this area. However, it was not found in Ranong until now (Cotton pers. comm.) and the few existing lists and publications referring to or including this area (Godfrey 1930, 1932, Küppers & Janikorn 2008, 2009) confirm this hypothesis. On the other hand it seems quite possible that this butterfly will be discovered in other localities in the Kedawian Zone.

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Figs. 1–2: ♀ of *Byasa adamsoni takakoae* (Thong Ao, Suratthani Province, South Thailand, coll. K. Lechner). **Fig. 1:** upperside, **Fig. 2:** underside. — **Figs. 3–4:** ♀ of *Byasa adamsoni adamsoni* (Chiang Dao, Chiang Mai Province, North Thailand, coll. A. M. Cotton) (reproduced with kind permission by A. M. Cotton). **Fig. 3:** upperside, **Fig. 4:** underside. — **Fig. 5:** Thong Ao village located on the east coast at the Gulf of Thailand (Suratthani Province), the collecting site of the ♀ discussed in this paper (July 2009).

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